

REMARKS

A. Request for Reconsideration

Applicants have carefully considered the matters raised by the Examiner in the outstanding Office Action but remain of the position that patentable subject matter is present. Applicants respectfully request reconsideration of the Examiner's position based on the amendments to the claims and the following remarks.

B. The Invention

The present invention is directed to a hole-punching processor having a hole-punching device and a sheet-edge detector in a fixed relationship with each other.

In one of the novel aspects of the invention, the sheet-edge detector includes a plurality of sheet-edge sensors corresponding to different sheet sizes processed by the hole-punching processor. The plurality of sheet-edge sensors allow for less movement of the hole-punching device during detection of a sheet side edge thereby lessening the processing time (page 30, lines 3-6).

In another novel aspect of the invention, the sheet-edge detector having the plurality of sheet-edge sensors is fixed to the hole-punching device so that the sheet-edge detector and the hole-punching device move in conjunction with each other. This integrated structure can be driven by a single driving means resulting in minimization and simplification of the hole-punching processor.

C. Claim Amendments

Claims 1, 3-10, 13, 14 and 20 are presented for further prosecution. Claims 2 and 12 have been canceled by this amendment. Claims 15-19 have been withdrawn from consideration.

Claim 1 has been amended to include the limitations of claim 2, albeit that the language of claim 2 has not been added verbatim. Claim 1 now recites that the sheet-edge detector includes a plurality of sheet-edge sensors, each sensor corresponding to different sheet sizes to be processed. Claim 2 has been canceled.

Claim 9 has been similarly amended to include the limitations of claim 12. Claim 12 has been canceled.

Claim 11 has been canceled.

The amendments to claims 1 and 9 were necessitated by the newly cited reference Copp. Furthermore, amended claims 1 and 9 in essence present claims 2 and 12 in independent form. Thus, it is submitted that these amendments should be entered.

D. Rejection under 35 USC 112

Claim 11 had been objected to for failing to limit claims 9 and 10. Claim 11 has been canceled.

E. Rejections under 35 USC 102(b) and 35 USC 103(a)

Six different prior art rejections had been put forward: (1) claims 1 and 20 had been rejected as being anticipated by Copp (3,955,454); (2) claim 2 had been rejected as being unpatentable over Copp in view of Suzuki (5,182,861); (3) claims 3, 9-11 and 14 had been rejected as being unpatentable over Okamoto (US 6,430,382) in view of Copp; (4) claim 12 had been rejected as being unpatentable over Okamoto in view of Copp and Suzuki; (5) claims 4, 6, 7 and 13 had been rejected as being unpatentable over Okamoto in view of Copp and Kamada (4,789,903); and (6) claims 5 and 8 had been rejected as being unpatentable over Okamoto in view of Copp, Kamada and Suzuki.

As a result of the addition of claim 2 to claim 1 and claim 12 to claim 9, each of the above rejections are moot except for the obviousness rejection against claim 2 based on Copp and Suzuki, and the obviousness rejection against claim 12 based on Okamoto, Copp and Suzuki.

Copp had been cited to teach a hole-punching processor having a hole-punching device and a sheet-edge detector affixed to the hole-punching device. Suzuki had been cited to teach multiple sheet-edge detectors for detecting different sized sheets. Okamoto had been cited to teach an image forming apparatus having an image-forming section, an ejecting section and a hole-punching processor.

For claim 2, the Examiner had taken the position that it would be obvious to add the multiple detectors of Suzuki to the hole-punching processor of Copp. For claim 12, the Examiner had stated that it would be obvious to modify the apparatus of Okamoto to include the hole-punching processor of Copp with the plurality of detectors of Suzuki.

1. The plurality of sensors of Suzuki are different than the plurality of sensors of claims 1 and 9

Suzuki is directed to an apparatus that nips and conveys a paper sheet using arm 38 that is fixed on shaft 36, and arm 40 that is slidable along shaft 36 in the Y-

axis direction of Figure 1 (col. 3, lines 3-8). In Figure 1 of Suzuki, arms 38 and 40 are respectively located above the first and third drive rollers 24 to convey sheet 94 in the X-axis direction.

Suzuki shows that the first, second and third sheet width detecting sensors 90 are located at positions corresponding to the second, third and fourth drive rollers 24 (Figure 1 and col. 3, lines 51-53). As sheet 94 is fed toward arms 38 and 40, sheet 94 covers one or more detectors 90, and arm 40 slides in the Y-axis direction to a position above the drive roller 24 that corresponds to the outermost covered detector 90. For instance, Figure 1 of Suzuki illustrates the arrangement where first and second detectors 90 are covered by sheet 94, and arm 40 has been moved along the Y-axis to a position above the third drive roller 24 which corresponds to the second detector 90.

Suzuki does not employ detectors 90 to determine the exact sheet size. Rather, Suzuki employs detectors 90 to judge whether arm 40 should be moved to a position above the second, third or fourth drive roller 24. For example, arm 40 would always be above the third roller 24 whenever the second detector 90 is covered and the third detector 90 is uncovered. Suzuki is therefore not concerned with

determining the exact sheet size, since many different sheet sizes can cover the second detector 90 and not the third detector 90, and Suzuki will simply move arm 40 above the third roller 24.

In contrast to Figure 1 of Suzuki where arm 40 is moved above the third roller 24 for all sheet sizes that cover the second detector 90 but not the third detector 90, claims 1 and 9 recite that each of the plurality of sensors correspond to specific sheet sizes to be processed based on detecting the exact edge of the sheet. As shown in Figure 2 of the present invention, photo-sensors S1-S5 correspond to specific sheet sizes (such as 8½×11 or A4) and the hole-punching processor of the present invention determines the specific sheet size using one or more of photo-sensors S1-S5 (page 29, line 19 to page 30, line 6).

Applicants therefore respectfully submit that Suzuki's plurality of detectors 90 are not the plurality of sheet-edge detectors that detect the exact size of the sheet, since detectors 90 of Suzuki do not correspond to specific sheet sizes, while the detectors of the present invention do correspond to specific sheet sizes.

2. One of skill in the art would not mount the detectors of Suzuki in a fixed relationship with the hole-punching device of Copp

Figure 1 of Suzuki illustrates a plurality of detectors 90 located on sheet mounting member 14. As discussed in section 1 above, detectors 90 are employed in the feed path of sheet 94 so that arm 40 can slide in the Y-axis direction to an appropriate position above one of the drive rollers 24.

Applicants respectfully submit that an addition of the plurality of detectors 90 of Suzuki to the apparatus of Copp does not produce the claimed invention. According to the teachings of Suzuki, detectors 90 are used in the vicinity of the feed path, not in the vicinity of the hole-punching processor. Thus, it is submitted that one of skill in the art would follow the teachings of Suzuki and would add detectors 90 of Suzuki in the vicinity of the feed rollers of Copp, not in the vicinity of the hole-punching device of Copp.

Furthermore, Applicants respectfully submit that one of skill in the art would not provide the detectors of Suzuki in a fixed relationship with the hole-punching device as recited in claims 1 and 9. First, Suzuki clearly teaches that detectors 90 should be used in the feed path,

not fixed to the hole-punching processor as recited in claims 1 and 9. Second, the plurality of sensors of claims 1 and 9 are employed to correspond to specific sheet sizes (such as $8\frac{1}{2} \times 11$ or A4), while detectors 90 of Suzuki are not employed to correspond to specific sheet sizes. Thus, one of skill in the art would not be motivated to use detectors 90 of Suzuki to detect specific sheet sizes as recited in claims 1 and 9. Third, Suzuki and Copp do not suggest the advantages of the present invention explained in section B above, namely, that a hole-punching processor having a plurality of sensors lessens the processing time and can be driven by a single driving means.

Applicants therefore respectfully submit that it would not be obvious to produce the present invention based on the teachings of Suzuki and Copp.

3. Even if Suzuki's detectors are combined with Copp, one does not arrive at the present invention

Suzuki's detectors are positioned below the sheet and are fixed to the housing. Suzuki's detectors do not move. Furthermore, Suzuki's detectors do not detect the "edge" of the sheet so as to detect the exact size of the sheet. Suzuki's detectors only detect the "approximate" size of the sheet.

Thus, even if Suzuki's detectors were added to Copp, Copp would not detect the "edge" of the sheet because Suzuki's sensors do not detect the "edge" of the sheet. Furthermore, Suzuki's detectors when added to Copp do not move, but are fixed into the frame, and thus, unmovable and not part of Copp's carriage.

4. Copp is not concerned with moving the hole-punching device to consecutively punch webs of different sizes

Copp is directed to a device that punches holes in a continuously moving web. The moving web is composed of individual fillable bags that are separated and stacked after the holes are punched (Figures 2 and 3). As illustrated in Figure 4 of Copp, carriage 28 includes hole puncher 34 and edge sensor 36.

Copp teaches that sensor 36 is employed to move carriage 28 along rails 30 in order for the holes to be consistently punched at a desired distance from the edge of the web (col. 1, lines 59-66). In other words, Copp uses sensor 36 to compensate for slight vertical variations in a continuous line to guarantee that holes are consistently punched from the edge of the moving line (i.e., to always punch holes 2 inches from the edge of the web). Copp explains that punching holes at a fixed distance from the

edge of the web is crucial to produce a bag that does not prematurely tear during filling and is strong enough to hang on the stacking pins (col. 1, lines 15-27).

In contrast to the device of Copp that is designed to always punch holes a predetermined distance from the edge of the web, the hole-punching processor of the present invention is designed to punch holes at various locations for different sheet sizes. These different sheet sizes can be fed to the hole-punching processor in any random order. For example, the hole-punching processor of the present invention can move to a first location to punch a hole in a first sheet size, and then can move to a second location to punch a hole in a second different sheet size. In order to facilitate the movement of the hole-punching processor, the Inventors have discovered that providing the claimed plurality of sensors in a fixed relationship with the hole-punching device facilitates efficient hole punching.

As recited in claims 1 and 9, the sensors detect the edges of different sheets, not a continuous line. Copp does not teach or suggest detecting the edge of individual, discontinuous sheets. Rather, Copp teaches only following a straight, continuous line and detecting slight variations in that continuous line.

Also, as recited in claims 1 and 9, multiple sensors are used to detect the edges of multiple individual sheets. Copp only has one edge detector because Copp only detects one edge, the continuous edge of the line. In contrast, the present invention detects multiple edges because the present invention processes multiple sheets.

Applicants respectfully submit that one of skill in the art would not add a plurality of sensors to the apparatus of Copp. The apparatus of Copp would not benefit from a plurality of sensors, since the single sensor of Copp is sufficient to detect the edge of the web. In contrast to Copp, the plurality of sensors of claims 1 and 9 are necessary to correspond to various sheet sizes in order to conduct efficient hole punching.

In summary, the claims of the present invention define over Copp because:

- (1) the invention has multiple sensors, while Copp has one;
- (2) the invention processes different sheet sizes while, Copp processes only one continuous web; and
- (3) the invention processes individual sheets, i.e., not connected, while Copp processes one continuous web, not individual sheets.

The combination of Suzuki and Copp are even further removed from the present invention because:

- (1) Suzuki's detectors are fixed, while the sensors of the present invention are movable;
- (2) Suzuki's sensors do not detect the sheet edge, while the sensors of the invention detect the sheet edge; and
- (3) Suzuki's sensors do not detect specific sheet sizes; while the sensors of the invention correspond to specific sheet sizes.

It is respectfully submitted that one of skill in the art would not add a plurality of sensors to the apparatus of Copp since Copp is not concerned with punching different sized sheets.

F. Office Action Summary Page

Applicants note that the Office Action Summary page does not indicate the status of the drawings filed on February 25, 2005. Applicants request that the next Action reflect the status.

G. Conclusion

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance and such action is respectfully requested. Should any extensions of time or fees be necessary in order to maintain this Application in pending condition, appropriate requests are hereby made and authorization is given to debit Account # 02-2275.

Respectfully submitted,

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